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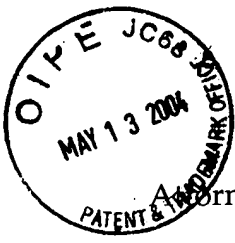
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Attorney's Docket No.: 006405.P005

Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: )  
 )  
Michael John Vidion Moreton )  
 ) Examiner: Not Yet Assigned  
Application No.: 10/729,680 )  
 ) Art Unit: 2661  
Filed: December 4, 2003 )  
 )  
For: TERMINATING FRAME )  
RECEPTION )  
\_\_\_\_\_ )

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

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Dear Sir:

In support of the claim for priority under 35 U.S.C. § 119, Applicant  
encloses herewith a certified copy of the priority foreign application listed below:

<u>Serial No.</u>	<u>Date of Application</u>	<u>Country</u>
0228396.8	12/05/2002	Great Britain/ United Kingdom

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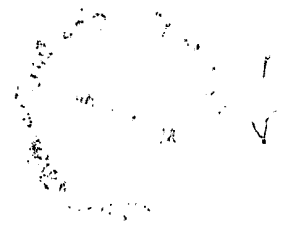
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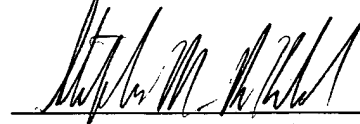
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Respectfully submitted,

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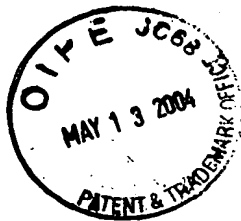
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INVESTOR IN PEOPLE

The Patent Office  
Concept House  
Cardiff Road  
Newport  
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NP10 8QQ

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

I also certify that the attached copy of the request for grant of a Patent (Form 1/77) bears an amendment, effected by this office, following a request by the applicant and agreed to by the Comptroller-General.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

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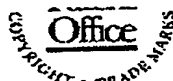
Signed

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ents Act 1977  
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- 5 DEC 2002

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South Wales  
NP10 8QQ

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## Your reference

~~STØ16~~ AJF/P62896/000

Patent application number

(The Patent Office will fill in this part)

05 DEC 2002

0228396.8

Full name, address and postcode of the or of  
each applicant (underline all surnames)

SYNAD TECHNOLOGIES LTD  
 ABBEY HSE, 1650 ARLINGTON  
 BUSINESS PARK, THEALE,  
 READING, BERKSHIRE, UK.

08268690003

Patents ADP number (if you know it)

**If the applicant is a corporate body, give the country/state of its incorporation**

UNITED KINGDOM

**Title of the invention**

## TERMINATING FRAME RECEPTION

i. Name of your agent (if you have one)

**"Address for service" in the United Kingdom  
to which all correspondence should be sent  
(including the postcode)**

~~SYNAD TECHNOLOGIES LTD  
ABBAY HSE, 1650 ARLINGTON  
BUSINESS PARK, THEALE,  
READING, BERKSHIRE, UK.~~

177 built Wade Tennant  
143 Verulam Gardens  
3m 70 Gray's Inn Rd  
Patents ADP number (if you know it) London

WC IX 8BT

42001

3. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

**Date of filing**  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
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8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

YES

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Claim(s)

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Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

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1.

I/We request the grant of a patent on the basis of this application.

Signature

*S. S. S. S. S.*

Date 05.12.02

2. Name and daytime telephone number of person to contact in the United Kingdom

DR. SUKI SANDHU  
0118 929 8136

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## Terminating frame reception

### Description

- 5 The present invention relates to wireless Local Area Networks (LANs), in particular, a method and dev

10 In accordance with the present invention there is provided a method of communicating between stations performing functionalities via a medium comprising:  
receiving part a frame having information about the state of the medium;  
identifying a period in the received frame containing a redundant data  
15 portion;  
terminating reception of the redundant data portion of the received frame at the identified period; and  
switching the station at the identified period to perform other functionalities.

20

### Background

25 Wireless networks, as standardised by the IEEE in their document 802.11, consist of a number of stations that transmit units of data called frames on a shared radio channel. Only one station can transmit at once - the allocation of the channel to an individual station so that it can transmit a frame is handled by an algorithm specified by the standard.

- 30 Each frame consists of header information, optionally followed in time by a payload. The payload is the data which the network was designed

to transport from station to station. The header contains the frame type (which describes the frames role in the protocol), information about the length of the frame, an address field that identifies the intended recipient(s) of the frame and other information required for the correct operation of the protocol.

Stations in an IEEE 802.11 wireless network have hardware for the transmission and reception of the radio signals specified by the standard. This hardware can, in general, only be used on a single radio channel at once. In addition, most hardware of this type has the facility to be switched off when not in use, in the process substantially reducing the power consumption. As wireless LANs are often used in battery powered devices, any mechanism for reducing power consumption is extremely desirable.

This invention proposes a technique by which a station can determine at an early stage that the rest of the frame is of no interest to it. This frees a period of time during which the receiver hardware can either be placed into a low power consumption mode, or during which it could be used for other purposes. Examples of such other purposes include scanning alternative radio channels for alternative wireless networks that the station might wish to use at some later point, and detecting the presence of other users of the radio channel, such as RADAR.

IEEE 802.11 already includes a mechanism for stations to enter a power saving state. While in this state, the station will neither transmit or receive frames, and other stations in the network will store frames intended for that station until it wakes up from the power saving state.

The amount of co-ordination required between the stations in the network to achieve this means that it works on a fairly coarse

granularity (of the order of 100 milliseconds). This means that performance of the network connection will be disrupted for the station in question. Higher level protocols that are encapsulated inside the frames (such as TCP/IP) may react badly to the stop/start nature of the link, potentially reducing the overall performance even further. As a result the standard power saving state should only be used at times when the traffic requirements of the station in question are extremely low, or the reduction in performance is likely to be noticeable to the user of the device.

In contrast, this mechanism does not require any co-operation from other stations in the network, and does not disrupt the normal flow of frames in any way. The only time used is time that would normally be wasted in the reception of data that would immediately be discarded.

#### An embodiment of the present invention

The generalised format of an IEEE 802.11 frame is shown in figure 1. Elements of the frame are transmitted one after the other (in time) starting at the left of the frame, and continuing (without break) to the right.

The elements of the frame that are useful in this invention are:

The PLCP header which contains the PLCP Length field, and can be used to determine the period of time until the end of the frame; the MAC header, which contains the recipient address and the frame type; and the Frame Check Sequence (FCS), which allows the receiver to discard frames that have been corrupted by interference.

If the recipient address does not specify this station, then the station knows that the payload (if any) is not of interest to it. Furthermore, it also knows that the FCS will not be of interest to it, as all it can indicate is another reason for ignoring the rest of the frame.

5

Hence the station knows that there will be a period of time (that can be calculated from the PLCP header length field) during which the radio medium will be busy with data that is of no interest to the station. It can use this period of time to perform other tasks such as:

10

(a) entering a low power consumption mode,  
(b) tuning to a different radio channel and looking for other wireless LANs that it might want to connect to at some later point,

15

(c) or performing checks for other users of the current channel, such as the RADAR detection checks required in some regulatory domains.

20

A further enhancement is possible and is described in figure 2. The protocol defines that after transmission of a frame with a payload there will be a short delay called a SIFS, followed by transmission of an acknowledgement frame called an ACK frame, followed by another short period which will be at least as long as a SIFS. As the time taken to transmit the ACK frame can be calculated, the time during which this station can ignore frames on the channel is extended by an additional period of 2 x SIFS plus the time to send the ACK.

25

30

The major advantage of this invention is that it can be used even during periods of relatively heavy traffic on the radio channel, and is invisible to transported protocols, and hence the user. Moreover, the present invention is applicable to ad hoc mode and infrastructure modes of wireless network communications.

PAGE 1 OF DRAWINGSDrawings

Frame preamble dependant on the exact radio channel in use.	PLCP Header	MAC Header	Frame Payload	FCS
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Figure 1

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# PAGE 2 OF DRAWINGS

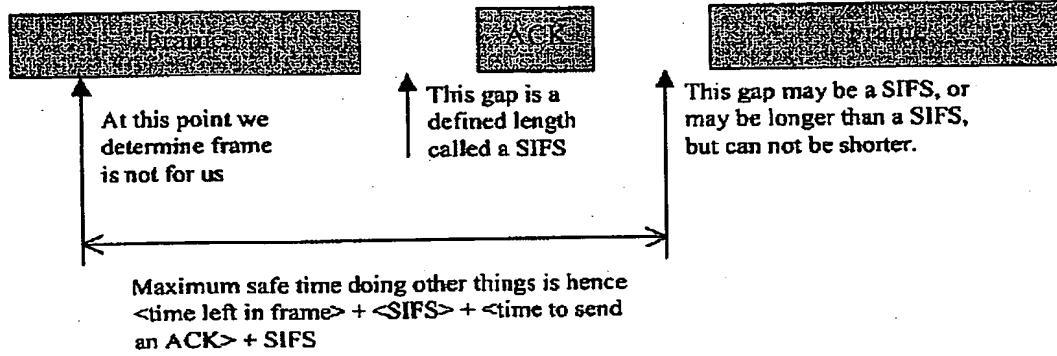


Figure 2

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